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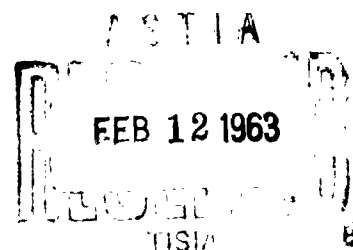
OAK MANUFACTURING COMPANY

Quarterly Progress Report #9  
13 May 1962 to 12 August 1962  
Contract #DA-36-039-SC-81297  
Modification No. 4  
Order #8202-PP-60-81-81

Submitted by: Howard Olson  
Contract Administrator

Oak Manufacturing Co.  
Crystal Lake, Illinois

January 22, 1963



Report Number Nine

Miniature Rotary Panel Sealed Switch

Contract #DA-36-039-SC-81297  
Modification No. 4

Order #8202-PP-60-81-81

Oak Manufacturing Company

Crystal Lake, Illinois

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## ABSTRACT

The Ninth Quarterly Report for the period from May 13 through August 12, 1962, was devoted to releasing drawings and making changes in the Oak Manufacturing Company design 1/2" diameter switch.

In addition, material was ordered, parts fabricated and switches were assembled to be life tested. These were the preproduction samples as indicated in Items 1-2, 1-2-1 through 1-2-8.

## PURPOSE

The purpose of this contract per Modification No. 4 is to establish the reliability and the producibility of the Oak Manufacturing Company 1/2" diameter switch. Our further purpose is to demonstrate the capability of Oak Manufacturing Company to produce this switch on a pilot line basis. Our program is also to include plans to produce this switch in large quantities in the event of an emergency.



NARRATIVE AND DATA

On May 4 the Engineering Department released on Memo No. 23343 the following changes for tooling and production:

21939 Revision "D" Rotor Insulator

21941 Sheet 1 Revision "D" Rotor Blade

21945 Revision "F" Front Plate

22445 Revision "A" Rotor Blade

On May 17 the Engineering Department released the following drawing revisions on Memo No. 23426 on part number 21939 Revision "C" Rotor Insulator.

On May 18 the Engineering Department released for tooling and production on Memo No. 23433 for part number 21990 Issue "A" Index Spring.

On May 29 the Engineering Department on Memo No. 23481 issued the following issue release and change notice for tooling and production:

23892 Rushing

22652-001 through -008 Parts List

22648 Revision "B" Rushing

On May 29 the Engineering Department issued Test Report No. 3104, Experimental Test, to determine the mechanical life test for a minimum of 35,000 cycles of failure. Test results were as follows:

All poles of switch failed to make contact after 5,830 cycles of operation.

Switch was life tested through 12 position (330°) C.W. and C.C.W. rotation at a rate of 13 complete cycles per minute using Oak Lab. #1334 life test machine. Two sets of clips in rear section will be monitored with pilot lights to insure contact make and break during life test. It was noted at start of test that the staking of bushing to front plate was already loose. The front section had no clip continuity because the common clips were omitted in assembly.

Shaft torque and contact resistance was measured at start of test and at various intervals during life test. Shaft torque was measured with Sturtevant 0-32 in./oz. torque wrench with switch mounted on life test bracket.

Shaft Torque in Inch Ounces

<u>Start</u>	<u>5,000</u>	<u>5,830</u>
16-19	16-20	14-20

One pole of the switch failed to make contact after 5,438 cycles. All poles had failed after 5,830 cycles. The life test was discontinued at this point.

Contact Resistance in Milliohms

Measurements taken at 100 ma - 2 V.D.C. using Oak Lab. #1134 test set and specially prepared alligator clip leads.

	<u>Between Top 2 Clips</u>	<u>Between Bottom 2 Clips</u>
Start:	6-10	5-8
5,000:	6-8	5-7

During this period from May 13 through August 12 orders were issued to the Production Department for the manufacture of 24 each preproduction samples of items 1-2, 1-2-1 through 1-2-8.

Material was requisitioned, the necessary parts fabricated and all outside purchasing done. The Manufacturing Department assembled the parts that go into the various switches in order to get them ready for life test.

## CONCLUSIONS

The only test run during this quarter was a mechanical test on Report No. 3104. While this particular test failed, subsequent changes in the construction and further tests will be made.

The preproduction switches are being fabricated by the Manufacturing Department for the Engineering Department's test and evaluation.

## WORK SCHEDULE

The Tenth Quarterly Report for the period beginning August 13 through November 12, 1962, will be devoted to life testing of the preproduction switches.

## PERSONNEL

B. J. Golbeck - Engineering Manager of Switches

C. P. Charamond - Engineering Designer

S. Wasiak - Technician in Charge of Environmental Lab

G. Mruk - Foreman